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ILLINOIS ENGINEER



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THE ILLINOIS ENGINEER, FEBRUARY, 1956—VOLUME XXXII, NO. 2

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Affiliated with the National Society of Professional Engineers

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Of Interest to I. S. P. E.

PRESIDENT'S MESSAGE

The membership of the ISPE is composed of a variety of engineering interests or fields; united as one group, they represent and should subscribe to the ideals, programs and objectives of the Society.



President Wallace

Who is better informed on our modern-day problems of transportation, housing, water supply and sanitation, mass production of consumer goods, safety, development of our natural resources, finance and government than the Professional Engineer?

Through education, training and experience, the Professional Engineer has and

will solve these many problems, provided he is willing to accept his responsibility as a professional man and a civic leader.

You are a specialist in the solution of some phase of these many problems, and if you give freely of your time, your money, your experience and your vocal persuasion, then the Professional Engineer will make this world a better, safer and more harmonious place to live in, work in, and to pass on to posterity. Elevate yourself in public esteem by doing a little more than others beyond the call of duty.

The Engineer, as a Professional man, must become more active in civic affairs. He must make available his common sense and thinking ability to neighborhood associations, local committees, city, county and state groups. The Professional Engineer through education and his experience with the true facts and their solutions, is capable of analyzing these many problems, both economically and judiciously. His training is such that he is not easily swayed or fooled by high pressure propaganda or corrupt politics.

It is the duty and responsibility of all Chapter and State Officers, and for every Professional Engineer to enter the arena of civic activity.

INSTEAD OF GOING ONE MILE, LET'S GO TWO MILES. MAKE THE ISPE A 100% UNIFIED PROFESSIONAL SOCIETY FOR YOU AND MANKIND.

DWAIN M. WALLACE, President

The shades of night were falling fast when for a kiss he asked her.

She must have answered yes, because the shades came down much faster.

Vox Secretarii

By P. E. ROBERTS, Executive Secretary

Chapter Officers Conference

The Eighth Annual Chapter Officers Conference was held in Peoria on Saturday, January 28. In spite of extremely bad road conditions, President Wallace, Secretary Spicer, Vice President-elect Neureuther and Executive Secretary Roberts, plus thirty-some Chapter officers and Membership Chairmen, were in attendance. An innovation this year was a separate meeting at 11 o'clock of the Membership Chairmen to discuss their mutual problems. Chairman Garcia was prevented from attending because of a death in his family and Vice President-elect Andy Neureuther did a very creditable job as leader of the group. Some constructive proposals were offered, and it is probable that this meeting is the beginning of a drive for new members.

Ladies Auxiliaries

Unit No. 5 of the Ladies Auxiliary organization has been organized in the Peoria Chapter area. Mrs. Caroline Wallace is number one President of the new Auxiliary. The ladies will have their Charter presentation ceremony at a dinner meeting on Saturday, February 25. May the ladies benefit and enjoy themselves in their new association.

Engineering Open House

On March 10 the University of Illinois will hold its Annual Engineering Open House. The first attempt at an Open House was by the Department of Electrical Engineering in 1907. Then later, Mechanical Engineering sponsored a similar affair. In 1920 the various engineering departments began to exert a cooperative effort

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READ THE ADVERTISEMENTS

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\$2.00 per year in advance to members of the Illinois Society of Professional Engineers. \$4.00 per year in advance to non-members in U.S.A. and its possessions, Canada, and Mexico. Foreign \$6.00. Single copies 40c.

Published by the Illinois Society of Professional Engineers, Inc., at 614 East Green Street, Champaign, Illinois.

Address all communications to the Illinois Society, P. E. Roberts, Editor, 614 East Green Street, Champaign, Illinois.

The Illinois Society is not responsible for statements made or opinions expressed in this publication.

Entered as Second Class Matter April 27, 1949, at the Post Office, Champaign, Illinois.



Royce E. Johnson
President



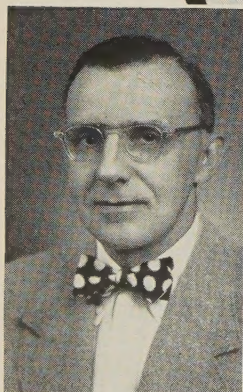
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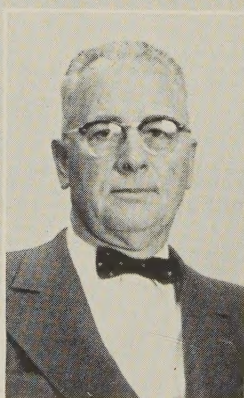
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1956-57

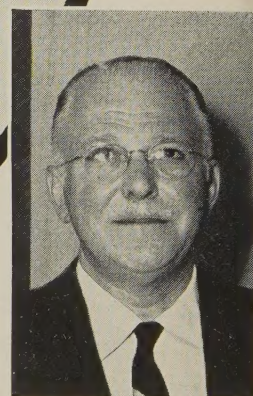
*Illinois Society
Officers*



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National Director



Wayne W. Wallace
National Director



K. C. Hoeglund
Chairman, I. E. C.
Representatives

PRESIDENT

Royce E. Johnson (S '47, N '52). Prior to coming to Illinois, Mr. Johnson was a member of the Wisconsin Society of Professional Engineers from 1938 to 1947. In Wisconsin he was Assistant Professor of Electrical Engineering at the University of Wisconsin, Director of the Electrical Standards Laboratory for the University and Public Service Commission of Wisconsin, and consulting engineer for the Wisconsin State Department of Architects and Engineers. His activities include membership in various technical, professional, engineering and religious societies, together with the Kiwanis Club and the Chamber of Commerce of Rockford. He made an able Vice President and the Society should advance under his aggressive leadership as President.

VICE PRESIDENT

A. W. Neureuther (S '38, N '44). Mr. Neureuther served as member and chairman of several Society committees. He was President of the Central Illinois Chapter in 1946 and General Chairman of the 65th Annual Meeting Committee in 1950. He earned his Bachelor of Science and Master of Science degrees at the University of Illinois in 1932 and 1933. He joined A. E. Staley organization after leaving the University of Illinois and at present is its Chief Engineer. Andy has been active in various civic and business groups in Decatur and is the father of four school-age children. He is well qualified for his post as Vice President and the Society is fortunate in having men of such calibre to guide its destinies.

SECRETARY-TREASURER

A. D. Spicer (S '44, N '46). Mr. Spicer has been re-elected for the fourth time as Secretary-Treasurer of the Society. Almost from the day of his election he began his work in the Society. In 1946 he was one of the organizers of the West Central (then Kewanee) Chapter, and served as its Secretary-Treasurer from 1946 through 1950. He was Vice President of the Illinois Society in 1951 and President in 1952, becoming Secretary-Treasurer in 1953, so his service on the Board has been continuous for the past five years. He is in charge of development engineering for Kewanee Boiler Company. He has a wife and two Boy Scout-age boys.

NATIONAL DIRECTOR

C. W. Klassen (S '26, N '46). Mr. Klassen's service to the Society began as Chairman of the Water Supply Section in 1931. Since that time he has served as member and chairman of various committees. He received the Illinois Award in 1951. He served as Vice President of the Society in 1953 and as President in 1954-55. He was elected National Director by the Board of Direction a year ago, and under the revised Constitution was re-elected to that post by the corporate members of the Society for another term. Mr. Klassen is Chief Sanitary Engineer of the Illinois Department of Public Health,

Springfield. His extra-curricular activities include M.C.-ing, photography and travel. He will ably represent Illinois on the National Board of Directors.

NATIONAL DIRECTOR

Wayne W. Wallace (S '35, N '40). Mr. Wallace is District Engineer with the Portland Cement Association. During the span of the twenty-one years of his membership, he has served as member and chairman of many important Society committees. He was Vice President of the Illinois Society in 1942 and the 58th President of the Society in 1943. He is well acquainted with Society background, history and government, and begins his service as Illinois' representative to N.S.P.E. with considerable personal knowledge.

CHAIRMAN I. E. C. REPRESENTATIVES

K. C. Hoeglund (S '45, N '52). Mr. Hoeglund, Chairman of the I. E. C. Representatives, has been re-elected for a three-year term. He is a native of Rockford, Illinois, born on April 15, 1902. His engineering education was received at Beloit College in Wisconsin and the University of Cincinnati, Ohio. An employee of Bauer and Black in Chicago for several years, K. C. is now Plant Development Manager. He has served on many Society committees and has been active in Chicago Chapter affairs, serving as Secretary-Treasurer in 1952, Vice President in 1953 and President in 1954.

RESULTS OF 1956 ELECTION

The polls closed at noon on January 16 and the Tellers Committee met in the Executive Secretary's office at 4:00 p.m. January 18 and the report showed the following results: President, Royce E. Johnson; Vice President, Andrew W. Neureuther; Secretary-Treasurer, A. Douglas Spicer; National Directors, C. W. Klassen and Wayne W. Wallace; Chairman Illinois Engineering Council Representatives, K. C. Hoeglund. Signed by the Tellers Committee, Mack H. Kinch, Chairman; Gordon V. Carlson; Edward R. Healy; and C. Dale Greffe.

COST OF LIVING INDEX

The cost of living correction factor to be applied to the I.S.P.E. Schedule of Minimum Fees and Salaries is based upon the Consumer Price Index of the 1947-49 average as determined by the Bureau of Labor Statistics. On the 1947-49 base the correction factor for December, 1955, is 114.7.

I hold every man a debtor to his profession;
from the which as men of course do seek to re-
ceive countenance and profit, so ought they of
duty to endeavor themselves by way of amends
to be a help and ornament thereunto.

Sir Francis Bacon

VOX SECRETARII

(Continued from page 1)

and Open House has been held each year since except for a lapse during World War II.

The Open House has been the means of not only announcing new processes, but it also provides an opportunity for young men to see what an engineer does and how he learns to do it. In the early twenties an engineering display first demonstrated the practicability of sound on film. The display was a picture and the sound of a man striking a bell. This demonstration was made while the movie industry was using synchronized records for their sound. Last year over 11,000 were clocked through the exhibits. If you have a son or a neighbor, this is an excellent time to visit the campus. The Open House begins at 8:00 a.m. and continues until 10:00 p.m. Information headquarters is in Civil Engineering Hall.

Chapter Program Chairmen

Chapter Program Chairmen and engineering counselors will be interested to know that there is available for distribution a color sound-on-film entitled "Engineering—a Career for Tomorrow." The film was sponsored by Eta Kappa Nu, the national electrical engineering honor society, and was produced in the TV workshop at the University of Illinois. This film shows a high school student the work of an engineer and uses as its central theme the development of a mobile telephone system for an electric utility company. It is extremely well done and it is available at a rental price of \$1.00 plus postage, from Visual Aids, Division of Extension, University of Illinois, Urbana.

Miscellany

Dues collections this year are better than at the same time last year; however, every check sent in before the second notice is prepared and mailed saves both time and money. As we go to press the Illini basketball team is giving a good account of itself with its firewagon type of game . . . The Membership Committee will appreciate any help you can give in securing at least one application before the Annual Meeting.

WHO PAYS FOR HIGHWAY UTILITY CHANGES?

The 84th U. S. Congress adjourned last month without passing the Federal highway bill to provide for a 10-year program of U. S. highway modernization. The proposed bill called for an expenditure of 54 billion dollars over and above normal highway expenditures, during the next decade.

There is general agreement that more than half our primary road system is obsolete and modernization is badly needed. Undoubtedly the bill will come up for passage by Congress when that body convenes again. Water works and other utility men hope that Congress then will also adopt legislation to permit utilities to be reimbursed for the cost of changes in their distribution systems incident to Federal-State highway construction.

The U. S. Senate passed a bill of this nature this sum-

Obituaries

Richard J. Moore

Richard J. Moore (S '34, N '39), General Manager and President of Moore Brothers Construction Company died suddenly on November 2, 1955.

Mr. Moore was a native of Mexico, Missouri, but moved to St. Louis about 45 years ago. He was a member of the St. Clair Chapter of the Illinois Society and had many social, fraternal and religious society interests.

Hymen Shifrin

Hymen Shifrin (S '39, N '47), widely-known consulting engineer and civic leader, died November 22, 1955.

Mr. Shifrin was born and received all his education in St. Louis. He earned a B.S. in Civil Engineering at Washington University in 1913. He was a Lieutenant in the engineering corps and saw duty in Europe in World War I.

Mr. Shifrin was a member of the firm of Horner and Shifrin and was active in many social, religious and civic organizations.

Joseph Z. Burgee

Joseph Z. Burgee (N '53), a member of the well known firm of architects and engineers, Holabird, Root and Burgee, died in a hotel room in New York City of a heart attack on January 5, 1956.

Mr. Burgee was born in St. Louis on December 30, 1897 and received his architectural education at the University of Illinois. From 1927 to 1940 he was Chief Superintendent of Construction for Holabird and Root and became a partner in the firm in 1945. He served as a special adviser in the office of production management in 1941 and 1942.

Mr. Burgee was responsible for many notable architectural projects, not only in Illinois and the United States but in Bombay, Italy, Venezuela and Colombia.

He was an adviser for the Chicago Lake Front Fair, he was on hospital and University boards, and he was a member of numerous civic, social and athletic clubs.

mer. In the House of Representatives, H.R. 7072 was introduced for the same purpose, but was referred to the Committee on Public Works and never came to vote.

Utility men state that construction changes as may be required by a new or re-located highway do not benefit the utility, that they are a part of the highway modernization and should be paid for out of the same highway funds. Utility underground lines are as essential to modern living as are highways. They have as much right to use the space underground beneath a highway as motor cars have to use the highway above ground. When the utility line needs to be changed because the highway is re-located or the grade changed, the job is part of the highway improvement and the utility should be reimbursed for its cost.

Membership Memo

By MANUEL GARCIA, Membership Chairman

In an article* published in *Engineering News-Record*, dated November 17, 1955, the following statement was made:

"Engineers: High on Labor's List of Prospects." The professional engineer is becoming a number one target of organized labor.

When the AFL and CIO merge next month, emphasis on organization will be increased within both the new federation and the independent union of Engineers and Scientists of America. Civil engineers have already been placed on the active list of prospects.

So far, the campaign to attract engineers into labor's fold is still in the talking stage. Formal plans have not been drawn up, but the implications are clear.

The historic alliance of organized labor promises to increase the rivalry between unions now competing for engineers, instead of consolidating their efforts. Pitted against each other in the forthcoming crusade to organize the unorganized will be the trade union forces that want the engineer to become a part of the organized labor movement and the independent ESA which would keep the engineer in a separate bargaining category. Fighting both will be the professional engineering societies, which feel that any labor alliance, however limited, will injure the engineer's professional status.

Competition's keen—And there's a chance that two AFL unions will scrap among themselves to sign up engineers. One, the American Federation of Technical Engineers, claims full jurisdiction within the merged organization but the other, the International Union of Operating Engineers, has already invaded the territory in the construction industry (ENR June 23, p. 80) and appears likely to continue the campaign.

Contributing to the rivalry that lies ahead is the fact that ESA has set its sights on expanding its membership of civil engineers—now representing an estimated 10% of its membership. So far, ESA has been the front runner in signing up mechanical, electrical and aeronautical engineers, and any organizing clashes that develop between ESA and the two AFL unions operating in the same field stand a good chance of centering on civil engineers.

In addition, various industrial union affiliates, such as the CIO's United Auto Workers and electrical workers unions will be out to organize engineers in their own units.

Thus, organized labor is going after the engineer from a number of vantage points. Eventually, it will mean a quick acceleration of a campaign that's been going on for the past several years and which has succeeded in winning over only an estimated 60,000 out of a possible total of 300,000 engineers in industry that could be organized under terms of the Taft-Hartley Act."

The above article clearly implies that we, the Engineers, are the target for unionization and that much pressure will be exerted to entice us into the trade union fold.

It is not the intent of this article to degrade nor condemn trade unions but rather to state the fact that engineering is a profession and should be recognized and remain as such, intact, and without union affiliation.

At present it appears as though the various unions interested in seeking out the engineers for union membership, are concentrating on the Civil Engineers (both

registered professional engineers as well as those of sub-professional status). This is the starting point and will, no doubt, be extended into other branches of engineering.

It is important to remember that the sub-professional field of engineering is the training and proving grounds of the young engineer, namely rodmen, chainmen, inspectors, instrument men and draftsmen in the construction industry and offices of the Consulting Engineers. Many persons in the sub-professional branch of engineering are recent graduates of Engineering Schools and are in a training period (Engineers-in-training), obtaining the necessary years of experience as required by state law to obtain a certificate of registration, and many are practical engineers who are receiving their training in the field and are also attending night classes in engineering at various engineering schools. These persons should be encouraged to continue their training and education to prepare themselves for registration as professional engineers.

The National Society of Professional Engineers has come to the forefront in combating unionization of the engineers as stated below in the article from *Engineering News-Record*:

"Professional groups, such as the National Society of Professional Engineers, continue to fight all attempts at unionization of the engineer. They argue, with a great deal of success so far, that the union label will react to the disadvantage of the engineer, both as to his personal and professional prestige and his relationship with his firm."

We as individual members of ISPE, NSPE can discourage union affiliation by active participation in professional engineering activities, attendance at local chapter meetings, the State Annual Meeting, and committee work, BOOSTING OUR PROFESSION by enrolling registered professional engineers into our organization, encouraging non-registered engineers to register under state law, and forming student chapters to encourage young engineers to register and to develop a professional viewpoint.

ASEE Meetings

The dates for the Annual Meetings of American Society for Engineering Education for the next several years are as follows:

1956—Iowa State College, Ames, Iowa, June 25-29

1957—Cornell, Ithaca, New York, June 17-21

1958—University of California, Berkeley, California, (latter part of June)

1959—Purdue University, Lafayette, Ind., June 22-26

Some speakers drive home facts, others drive home their audiences.

—Ray D. Everson, *Ind. Farmers Guide*.

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THE WHITE HOUSE WASHINGTON

Gettysburg,
December 15, 1955

Dear Mr. Neff:

On the occasion of National Engineers' Week I am glad to pay tribute to the engineering profession, to the men whose practical applications of scientific knowledge have played a major role in our nation's achieving the highest standard of living the world has ever known.

In this age of accelerating technological progress our need for engineers to help maintain national security and promote the national welfare is continually expanding. This fact gives rise to one of the major problems now facing America—the problem of maintaining an adequate flow of well-qualified young people into our engineering colleges. An accompanying problem is to make sure that industry and government make the best possible use of the talents of our present engineers.

I hope the programs of National Engineers' Week in 1956 will serve to acquaint many of the talented and creative youth now in our high schools with the splendid opportunities for national service which are open to them in the engineering profession. I also hope these programs will increase among our citizens in general a knowledge and appreciation of the debt this country owes to the engineering profession.

Sincerely,

DWIGHT D. EISENHOWER

Mr. Allison C. Neff, President
National Society of Professional Engineers
1121 Fifteenth Street, N.W.
Washington 5, D. C.

ENGINEERING OPEN HOUSE

University of Illinois, March 9 and 10, 1956

This year, as in the past, the students and staff of the College of Engineering at the University of Illinois present "Engineering Open House." The purpose of this annual event is to provide an opportunity for the public to see, smell, and touch works and accomplishments resulting from the application of engineering sciences and skills. It is of particular value to the high school student because it "shows" something of what engineering is like and indicates what kind of preparation the engineer needs in his high school and college work.

This is a golden opportunity for Professional Engineers to indicate their interest in the public welfare and in the future of engineering by volunteering to convey and guide a group of young, interested high school boys and girls through these exhibits. Although as many as 11,000 high school students visit the open house, much of the value is often lost because of a lack of competent guides. The exhibits are arranged on a departmental basis but behind all of these individual exhibits is the over-all spirit of engineering. The initiative, creative

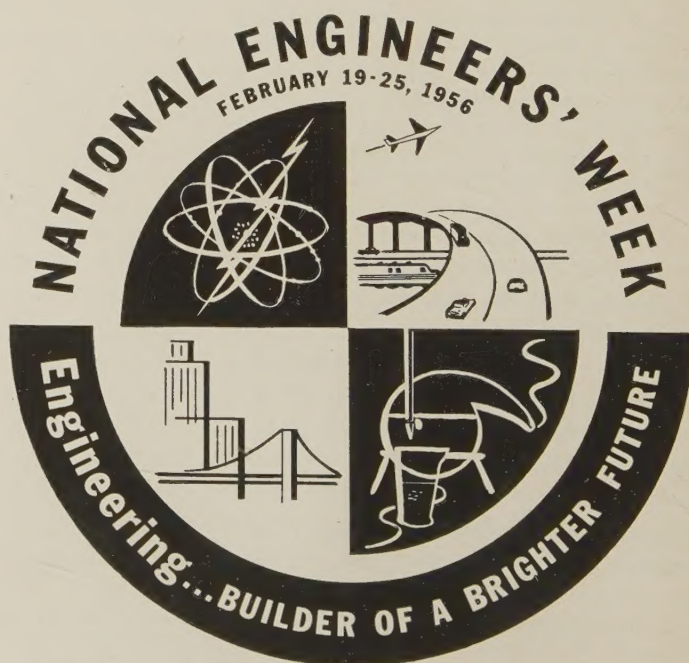


Governor Stratton presenting Engineers Week Proclamation to Dwain M. Wallace, President, Illinois Society of Professional Engineers. Looking on (center) is P. E. Roberts, Executive Secretary.

thinking, cooperation, and service implied by these exhibits have to be pointed out by someone who is already aware of their value. The students who plan and run the Open House do a tremendous job with the physical facilities, but it is up to the graduate Professional Engineer to carry the message and spirit of engineering.

The Illinois Society of Professional Engineers, through the cooperation of the individual members of the Champaign County Chapter, maintain an information table to answer questions about the profession of engineering.

J. RAYMOND CARROLL, P. E.
*Associate Professor of Mechanical Engineering
Faculty Member in Charge of Open House*



Sponsored by: National Society of Professional Engineers

Mathematics Problems

M1—You are making a survey of the following described tract of land:

That part of the East half of the South West quarter of Section 32, Township 42 North, Range East of the Third Principal Meridian described by beginning at a point in the North line of said South West quarter which is 196 Chains West of the center of said section; thence South 6 degrees West along the East line of the old Rogers Farm, which runs to a point in the South line of the aforesaid South West quarter 30 Rods West of the Southeast corner thereof, a distance of 11.69 Chains for the place of beginning of the tract of land herewith described, being the Northeast corner of the old Rogers Farm and marked by an old black-oak stump; thence South 61 degrees West 15 Chains; thence South 48½ degrees West along a line running to a point in the West line of said Section 32 which is 2 Chains North of the Southwest corner thereof; to an intersection with the West line of the East half of the South West quarter of Section 32; said point of intersection being 21.53 Chains South of the Northwest corner of the East half of the Southwest quarter of Section 32; thence South along the said West line 9.61 Chains; thence East parallel with the South line of the Southwest quarter of Section 32 to an intersection with the East line of the old Rogers Farm; thence North 6 degrees East to the place of beginning.

Your survey of Section 32 develops the measurements and angles of the Southwest quarter to be as shown below.

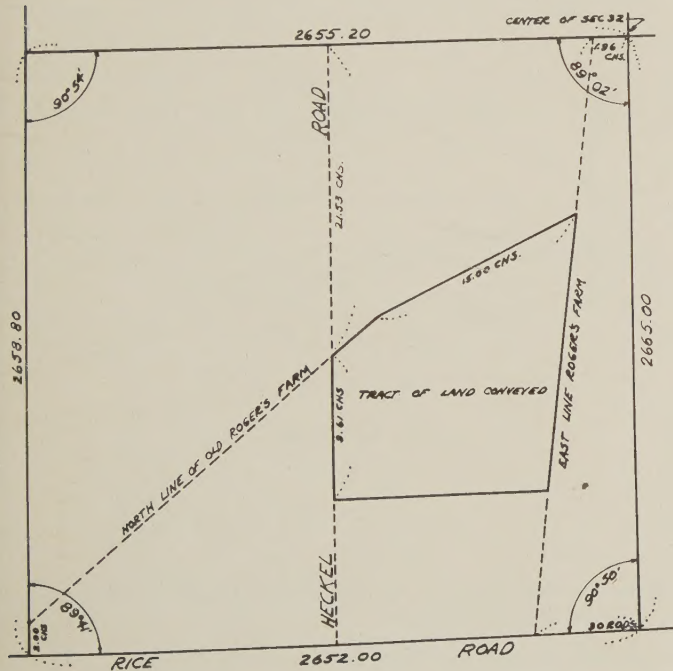


Figure M1

Calculate the length of lines omitted in description given by deed and the various angles formed by the lines, and the area in acres of the tract. Follow the data definitely given in the deed which can be used today. The original conveyance dates back to 1844 when the area in which this land is located was practically a wilderness.

Show all of your work.

M2—The original field notes of a portion of a survey read as follows:

Commencing at a stone monument known as corner No. 5 and running thence N. 62° E. 14 chains set stake; thence N. 43½° E. 8 chains set stake; thence N. 5° W. 12 chains set stake; thence N. 72½° E. 10.25 chains set stake; thence S. 12° W. 6.43 chains to stone for corner No. 3.

This line is to be reproduced and a surveyor commences at the stone monument for corner No. 5 and with a variation of $2^{\circ} 17'$ E. runs a random line according to the above field notes, setting a temporary stake at each angle in the line and finds his last stake is 62 links East of the stone for corner No. 3.

- What is the correction for variation of angle?
- What is the correction for error in chain?
- What is the correction for stake at each angle?
- And—How shall he find it?

M3—The Northwest corner of a survey is bounded by lines as shown by sketch. You are to supply the data necessary to close these lines from the field data hereon shown.

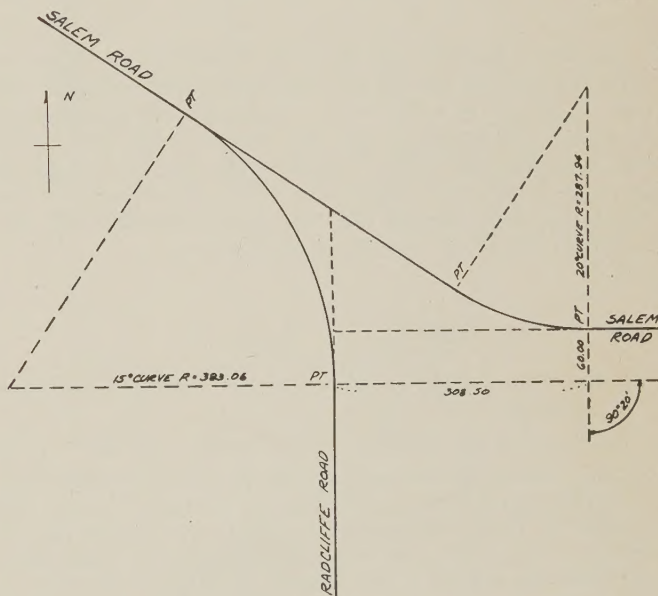


Figure M3

Calculate the length of curves; the tangent to connect them and the square foot area lying between the North and West lines of survey and the radius extended East of the curve along the West line and the radius extended South of the curved line along part of the North side of the land.

M4—A parcel of land was conveyed by the following description: To Wit—

An irregular parcel of land in the South West quarter of the South West quarter of Section 30, Township North, Range East of the Third Principal Meridian, described as follows. (Except the West 114.50 feet and except the South

50 feet), That part of the West 1085 feet of the South 1085 feet of said South West quarter lying Southerly and Westerly of a curved line convex to the South West having a radius of 963 feet, commencing at a point 122 feet North of the South line and 1085 feet East of the West line of said quarter and running Westerly and Northerly to a point 122 feet East of the West line and 1085 feet North of the South line of said Quarter.

This accompanying plat was given you.

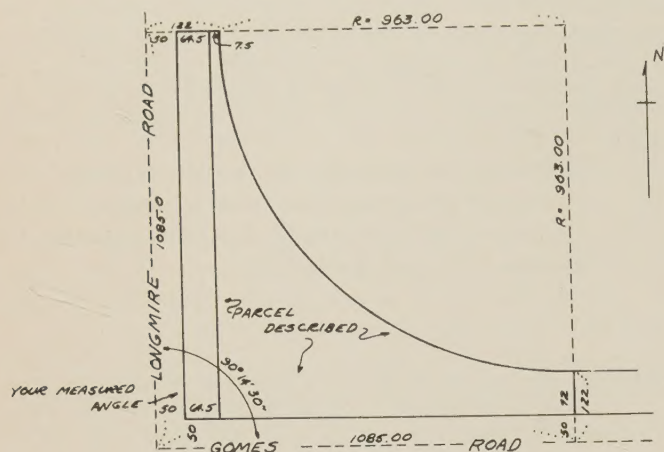


Figure M4

You are required to cut off the West 100 feet of the parcel described and by survey find the South West angle of the S.W. $\frac{1}{4}$ of Sec. 30 is $90^{\circ} 14' 30''$. Calculate the length of the East line; the length of arc and chord forming part of the East boundary line of the 100 foot strip, and the location of the point of tangency of the curved line, with relation to the North and West lines of the strip. Also: Calculate the area in square feet of the land involved in survey.

M5—You are making a survey of the following described property:

That part of the N.W. $\frac{1}{4}$ of Sec. 10, T. N., R. E. of the 3rd P.M. described by beginning at a point 400 feet East of the Northeast corner of the N.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of said Section 10; thence West along the North line of said quarter section to the Northwest corner thereof; thence South along the West line thereof to the Southwest corner of the N.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of said Section 10; thence Southeasterly to the Northeast corner of the S. $\frac{1}{2}$ of the S. $\frac{1}{2}$ of the N.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of said Section 10; thence South along the East line of the N.W. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of Section 10 aforesaid to the Southeast corner of said quarter quarter section; thence East along the South line of the N.E. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of Sec. 10 aforesaid to the Southeast corner of the W. $\frac{1}{2}$ of the N.E. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of said Sec. 10; thence Northwesterly along a line forming an angle of $76^{\circ} 30'$ measured from the last described course from West to Northwest a distance of 280 feet; thence Northeasterly to a point on the South line of the N. $\frac{1}{2}$ of the N.E. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of said Sec. 10 which is 750 feet East of the Southwest corner of said 20 Acre tract; thence Northwesterly to the place of beginning.

From your survey of the section you are enabled to obtain the data shown on the sketch.

- Calculate the length of all lines bounding your survey.
- Calculate the area in acres of that part of survey in W. $\frac{1}{2}$ N.W. $\frac{1}{4}$ by triangular method.
- Calculate the area in acres of that part of survey in E. $\frac{1}{2}$ N.W. $\frac{1}{4}$ by double meridian method.

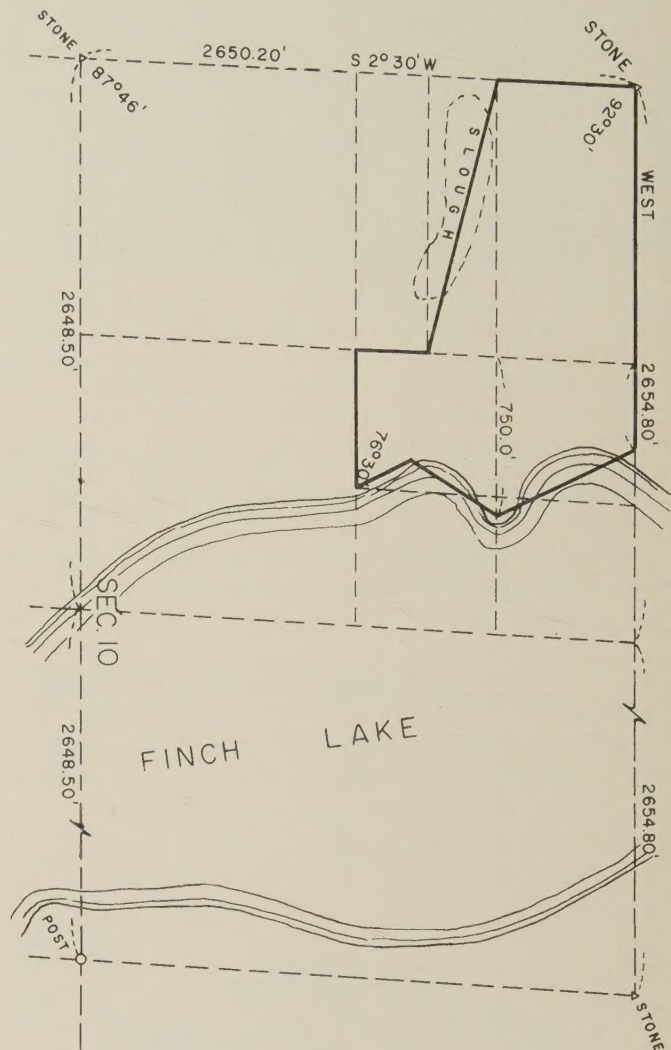


Figure M5

M6—The title to the E. $\frac{1}{2}$ of the N.W. Frac'l. $\frac{1}{4}$ of Section 10 was in John Smith.

In 1890 he sold the West 14.30 Acres to Hovey.

In 1899 his estate sold the East 37.18 Acres to Bacon, who in turn disposed of the East 18.59 Acres of the East 37.18 Acres of the E. $\frac{1}{2}$ of the N.W. Frac'l. $\frac{1}{4}$ of Sec. 10 to Krueger in 1910, and the West 18.59 Acres of the East 37.18 Acres of the E. $\frac{1}{2}$ of the N.W. Frac'l. $\frac{1}{4}$ of Sec. 10 to Elsner in 1912.

Your survey of the E. $\frac{1}{2}$ of N.W. Frac'l. $\frac{1}{4}$ of Sec. 10 shows the angles and measurements per sketch. Calculate the location and dimensions of the three parcels into which this tract of land is now divided.

Figure M6 next page →

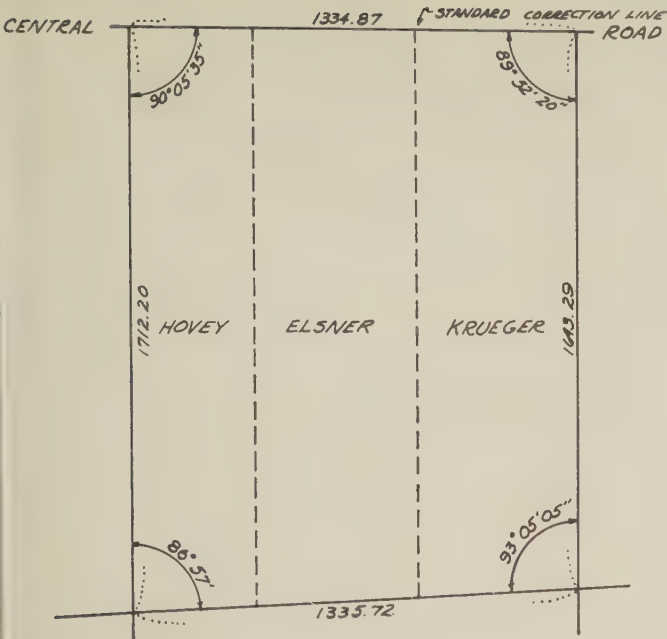


Figure M6

- M7—1. Demonstrate the equation of the circle and its use. Find chord of circle when radius and middle ordinate are given.
2. The sum of the sides of a triangle is 200 feet. The angles are respectively 37° , 59° , and 84° . What is the length of each side?
3. (Drawing)
- Calculate B-C; Area A-B-C; and angle "B".

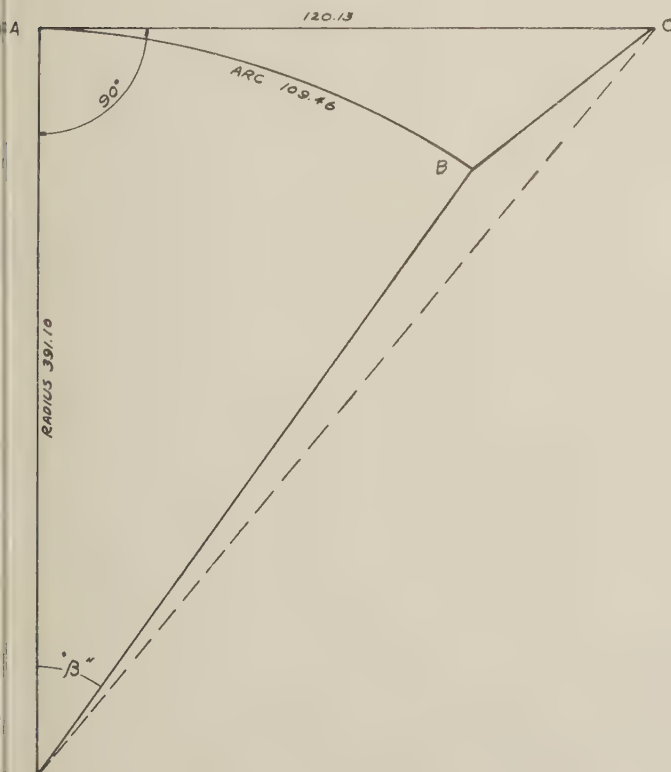


Figure M7

Statement

M8—The curved line C-D is to be 13 feet radially distant from the Southeast corner of the brick building.

Problem

Calculate the length of lines A-B; B-C; C-D; D-E and the area in square feet of the tract.

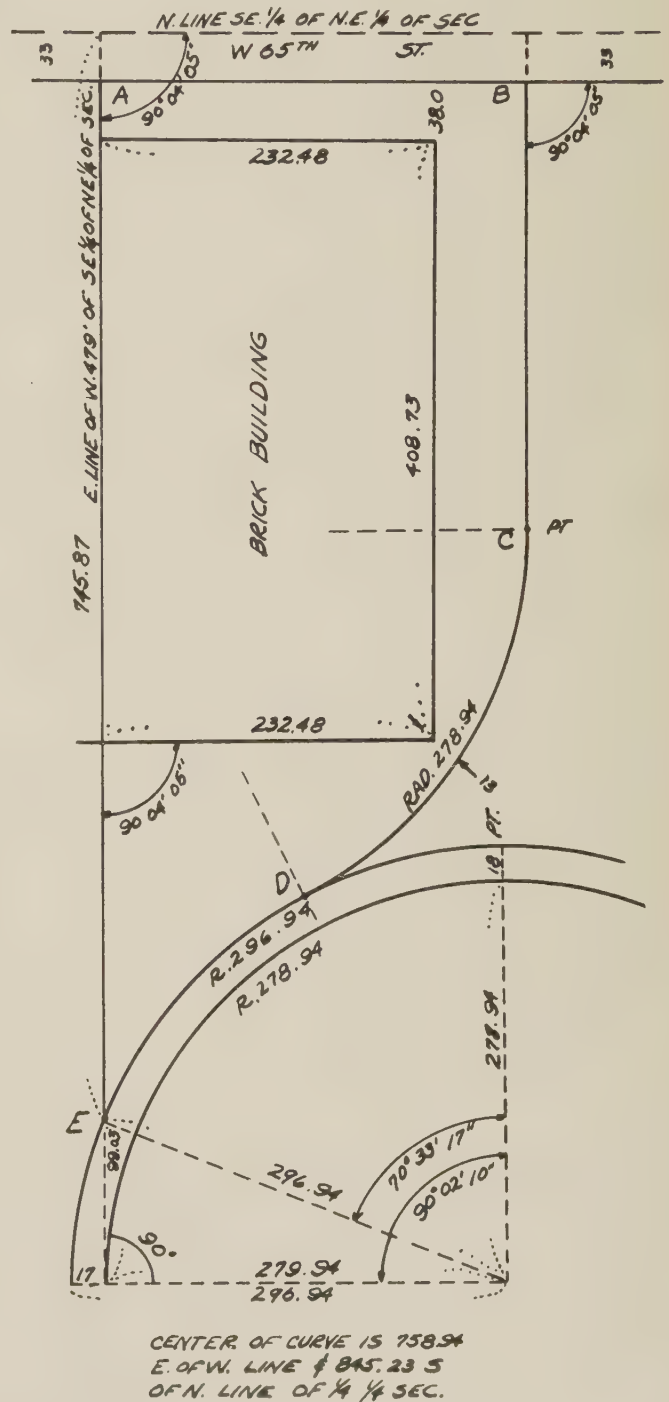


Figure M8

M9—Jones own that part lying South of the Right of Way of the Gulf, Mobile and Ohio Railroad of the N.E. ¼ of Section 19 . . . except that part thereof lying East of a line drawn at right angles to the South line of said quarter section through a point 200 feet West of the Southeast corner thereof. . . . He agrees to sell 5 Acres off of the East side of his holding, said 5 Acre tract to have

a length of 500 feet along the South line of the N.E. ¼ of Section 19.

Calculate the length of the Westerly and Northerly line of this 5 Acres, and the angles formed by these lines with each other and with South line of the N.E. ¼ of Section 19, using the data given on the above sketch.

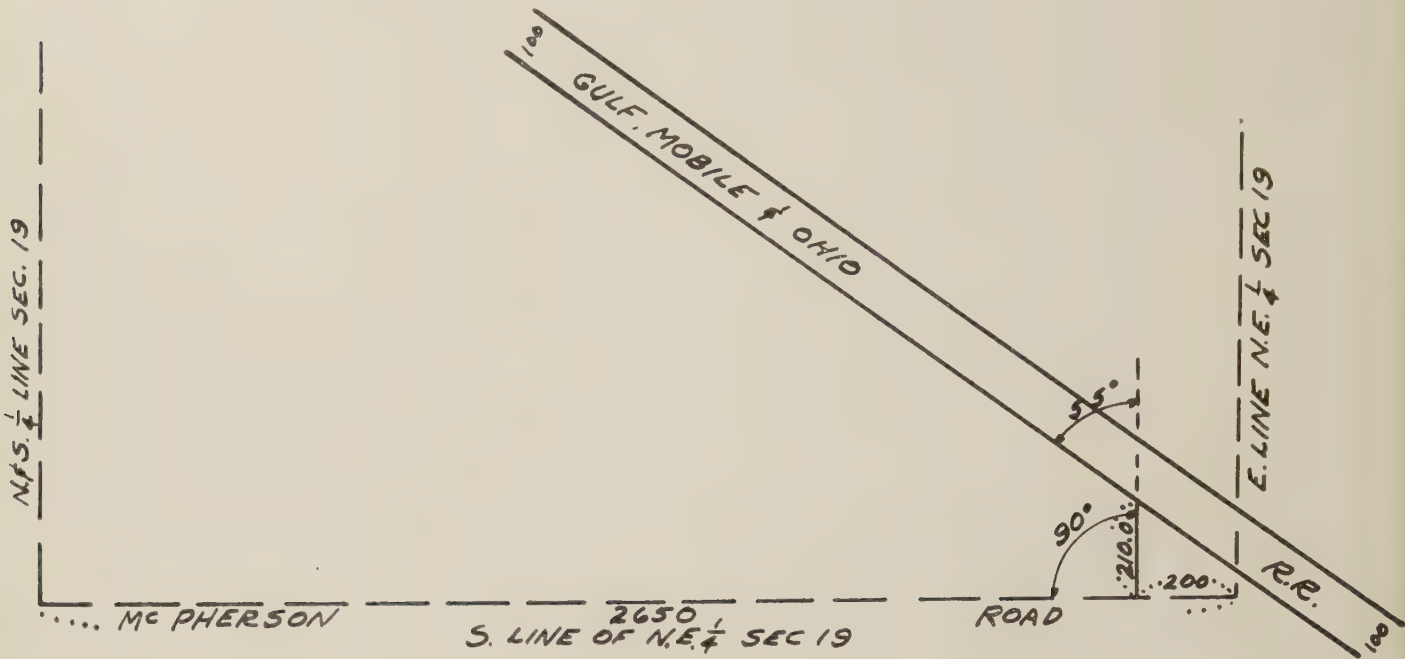


Figure M9

M10—Balance survey and calculate area by double meridian distance. Show all of your work.

Sta	BEARING	Dist CHS.	LATITUDE		DEPARTURE		M.D.	DM.D.	AREA N.	AREA S.
			N.	S.	E.	W.				
1.	N. 20° E	15.00								
2.	EAST	10.10								
3.	S. 10° E	20.00								
4.	S. 50° W	13.50								
5.	N 30° W	16.40								

Figure M10

Legal Questions

Illinois Statutes

- 1 Name the requirements of a statutory plat.
- 2 What certificates should be affixed to a plat for record?
- 3 After a subdivision has been vacated what action does the recorder take so that the same may become a matter of public record?
- 4 What procedure is employed to correct errors on recorded plats?
- 5 What are the distinguishing features between an ordinary plat of subdivision and a county clerk's division?
- 6 Why is it necessary for a person holding a mortgage on a parcel of vacant land to consent to the subdivision thereof?
- 7 Should a railroad construct a track on a public street and maintain it for a period of 50 years, has the municipality the right to remove it?
- 8 How is the office of "County Surveyor" filled?
- 9 When a deed differs with the figures given on a County Clerk's or Assessor's Division Plat, which must yield? Why?
- 10 What is an $\frac{1}{8}$ section corner?
- 11 Where the actual frontage of a block exceeds the sum of the frontage of all the lots therein as marked on the recorded plat, what shall be done with excess? Does this rule always hold? If not, why not?
- 12 What are the Riparian Rights of the owner of a tract of land bordering a navigable stream?
- 13 When deeding a tract of land bordering a water course, did the Government reserve the strip of land between the Government Meander Line and the water edge?
- 14 Where courses and distances disagree with fixed monuments, which must yield?
- 15 Assuming that a section corner monoument has been lost or destroyed, and that after a careful investigation by the surveyor, the corner monument cannot be re-established by the usual method, and also assuming that at the supposed location of the lost corner there are fences which have marked the boundaries of private ownership, said fences having been in existence for a period of years and recognized as the boundaries, would you be justified in fixing the section corner by the existing fences? If not, why not?
- 16 Are the field notes of a deceased surveyor admissible in evidence in case of a boundary dispute?
- 17 Where the public records of a subdivision have been destroyed, should the surveyors use the records of an abstract company?
- 18 Describe in full the procedure of vacating a public street or alley within the boundaries of incorporated cities or villages in the State of Illinois.
- 19 When surveyors disagree as to the location of a boundary line it is customary to abide by the decision of a disinterested surveyor. When, however, the interested parties cannot agree as to appointment of disinterested surveyor, how could a decision be brought about?
- 20 When a deed refers to a plat and the plat does not agree with the deed, which will govern?
- 21 What is meant by the expression of "Center Thread of River"?
- 22 Is the Thalweg of a stream identical with the center thread of river?
- L 23 In the event of a conflict of the descriptions in deeds from the same person, intended as the same tract of land, said deeds having been given at different times, which deed controls?
- L 24 Did the Government surveyor set monuments at the West Quarter Corners of Section 6, 7, 18, 19, 30, and 31?
- L 25 In the State of Illinois, what is meant by "statutory plat of subdivision"?
- L 26 Do you think it is more important that land surveyors should be registered to practice in Cook County than in the other counties of Illinois? If so, why? If not, why not? (What your opinion is, is not important, but your reasons are important).
- L 27 In Illinois we recognize certain plats of record as "statutory" and others as "common law" plats. What is the distinction between them?
- L 28 In general state what particular requirements are necessary to comply with the law relating to marking the boundaries of subdivisions.
- L 29 What rights does the State acquire through the recording of a subdivision?
- L 30 Are the rights the State acquired through the recording of a subdivision superior to the rights of the holder of a mortgage against the land subdivided who did not consent to the subdivision?
- L 31 How can a plat showing a division of land be made of public record without being recorded in the recorder's office of the county in which the land is located?
- L 32 Is a boundary line, established by a surveyor and his location acquiesced in by the adjacent owners at that time, but which later was found to be in error, binding upon the owners of the land affected by said line?
- L 33 Has the State any right or interest in a body of water, such as a river, small lake or Lake Michigan, which forms a portion of the boundary of land which the owner desires to subdivide to the shore line or bank of the adjoining stream? If so, to which department should the plat of subdivision be submitted for approval?
- L 34 How do you divide the S.E. $\frac{1}{4}$ section 5 into halves by an East and West line and in what way does this differ from dividing the N.E. $\frac{1}{4}$ of section 5 into Government Lots No. 1 and No. 2 containing 80 and 85 acres respectively by Government survey?
- L 35 What legal rights are vested in the surveyor in settling boundary line disputes?
- L 36 Why is it necessary for a trustee under a mortgage to sign a record plat?
- L 37 What public record is made to indicate that a subdivision has been vacated?
- L 38 Have plats of court partitions the same standing as ordinary plats of record?
- L 39 Write a short description by metes and bounds using specific boundaries which are operative and effective.
- L 40 When the staking of a subdivision is not in harmony with the record plat which one governs?
- L 41 What is an abstract of title to a piece of property?
- L 42 Name different ways by which property may be described.
- L 43 If the description to a piece of property is not technically correct under what condition will the court accept such a description?

- L 44 How is land described for legal purpose?
- L 45 How many stones are required to be shown on a plat for record?
- L 46 What is the difference between a common law road and a statutory road?
- L 47 If the United States surveyors laid out a government subdivision and in your survey of same you found a corner to be wrong, what would be the true corner?
- L 48 A owned the N.W. $\frac{1}{4}$ of Section 5 in a certain township. The section was fractional and the quarter in question overruns. If he sold the North 80 acres according to government survey, how should it be surveyed?
- L 49 What rules are necessary in the re-establishment of a lost closing corner?
- L 50 a. What constitutes dedication?
b. Is it necessary that there be a writing to effect dedication?
c. If it is unnecessary, cite an example of same.
d. What is the most common manner of setting off property to the use of the public which concerns surveyors?
- L 51 In the question of a private survey of an original survey, what fundamental evidence is necessary?
- L 52 If in the State of Illinois the owner or owners of adjacent tracts of land enter into a written agreement to employ and abide by the survey of some named surveyor, what should said surveyor do to make survey complete and binding upon parties?
- L 53 In reference to question 52:
a. Is said survey binding on a new purchaser should survey be in error?
b. Is a boundary agreed upon by accident or mistake binding?
c. What corners and lines in case of surveyors error are paramount and must prevail?
- L 54 In the question of boundary and ownership:
a. Who owns the bed of the GREAT LAKES?
b. Is Lake Michigan, which lies wholly within the territory of the United States, a "high sea"?
- L 55 What are the duties of the County Surveyor?
- L 56 State how permanent lines and corners may be established.
- L 57 Assuming that a block is subdivided into ten lots with a frontage of 50 feet each. By actual measurement the surveyor finds it to measure 505 feet. What disposition is made of the extra 5 feet?
- L 58 It is stipulated in the will of Mr. John Doe that his Calhoun County farm is to be divided equally among his three sons, each to have an equal frontage on the highway which forms one of the boundaries of the tract. The farm is of irregular shape and has not been surveyed for many years. Suppose you were retained as surveyor, what would you do as such?
- L 59 How is the office of County Surveyor established?
- L 60 State how and where his records should be filed, of what they should consist, and to whom they belong.
- L 61 Who is the custodian of the original field notes of the United States in the State of Illinois, and where are they kept?
- L 62 What certificates and acknowledgments should appear upon a plat of subdivision?
- L 63 What persons acknowledge a plat of partition made by order of the court, and who approves the same?
- L 64 What is a common law plat?
- L 65 What is a common law road?
- L 66 In a legal sense, what is meant by adverse possession?
- L 67 If a fence has enclosed a portion of public street for a long period of years, would this constitute adverse possession? And why?
- L 68 Mr. Smith owns the W. $\frac{1}{2}$ of the N.W. $\frac{1}{4}$ of Sec. 14-40-14. He sold the south 40 acres to Mr. A in the year 1890 and North 40 acres to Mr. B in the year 1892. Later A and B wish to construct a fence on the dividing line between their properties and call in a surveyor to define the same. The surveyor finds that the W. $\frac{1}{2}$ of the N.W. $\frac{1}{4}$ of the section contains only 79.50 acres. Where should he place the dividing line and why?
- L 69 How must a subdivision be monumented to meet the requirement of law?
- L 70 What is a "Common Law" subdivision or plat?
- L 71 What supervisory provision over plats of subdivision does the law provide before plats may be accepted for record by the county Recorder, or Registrar of Titles?
- L 72 To whom do vacated streets or alleys revert, when several different owners adjoin such streets or alleys?
- L 73 How much time must elapse before a claim of adverse possession to any public land, (such as a street, alley or park) can be perfected by a squatter?
- L 74 What is a Metes and Bounds description?
- L 75 How will you determine whether or not your transit is in perfect adjustment?
- L 76 Make a rough or scale drawing of the following described parcel or tract of land:

That part of section 10 T. 36 N. R. 12 E. of the 3rd P. M. described as follows: Beginning on the south line of the N. $\frac{1}{4}$ of the N.W. $\frac{1}{4}$ of said section 10, at a point 972.23 east of the west line of said Sec. 10 running thence west along said south line to the west line of said Sec. 10; thence north along said west line to the N.W. corner of said Sec. 10; thence east along the north line of said Sec. 10, a distance of 993.92 feet to the center of the road; thence southeasterly along the center line of said road (which forms an angle of 121-46' from W. to S.E. with the north line of said Sec. 10), 1403 feet more or less to a point 150 feet northwesterly of the south line of the N. $\frac{1}{2}$ of the N.W. $\frac{1}{4}$ of said Sec. 10 measured along said center line; thence southwesterly 191 feet to a point 62.63 feet northeasterly of a point in said south line northwesterly parallel with said center line of said road 351.50 feet to a point 330 feet northerly of said south line measured on a line parallel with a line passing through a point on said south line 972.33 feet east of the west line of said Sec. 10, and a point 495 feet south of the north line of said Sec. 10, and 330.84 feet west of the center line of said road measured on a line parallel with said south line which is 417 feet east of said last described line measured on a line parallel with the south line of the north half (N. $\frac{1}{2}$) of said northwest quarter (N.W. $\frac{1}{4}$); thence west parallel with said south line 417 feet; thence southerly 330 feet to the place of beginning.
- L 77 What is the legal procedure to be followed in subdividing a section into quarter sections—assuming that there are no double sets of section corners on township and range lines?

Tentative Program, 71st Annual Meeting

HOTEL MORaine, HIGHLAND PARK, ILLINOIS

Wednesday Evening, April 11

Pre-registration and Welcoming

Thursday, April 12

8:00 a.m. Registration

8:30 a.m. Board of Direction Meeting

12:15 p.m. Luncheon

Address (not picked yet)

2:00 p.m. Resumption of Board of Direction Meeting
Inspection trip for those who wish to attend

5:30 p.m. Cocktail Hour

6:30 p.m. Dinner
Speaker or Entertainment

Friday, April 13

8:00 a.m. Registration

9:00 a.m. Annual Business Meeting of the Society

12:15 p.m. Luncheon

Address—Mr. A. C. Neff, President NSPE

2:00 p.m. Resumption of Business Meeting

6:30 p.m. 71st Annual Banquet

Presentation Honorary Membership

Presentation of the Illinois Award

Presentation of Past President's Certificate

Speaker—Governor William G. Stratton
Dance



Chicago Chapter Second Annual Banquet was held in the Bismarck Room on January 12, 1956. Dr. A. Allan Bates, Vice President of Portland Cement Association, addressed the more than 180 present. The title of Dr. Bates's talk was, "An Engineer in the Evening." At the speakers' table seated left to right: Mrs. and Alois W. Graf, Chapter President-elect; Mrs. and George L. DeMent, National Director; Mrs. and John G. Duba, Chapter Vice-President-elect; standing: Rev. W. Stanley Sommerschild, Detroit, Michigan; Mrs. and Virgil E. Gunlock, Vice President N.S.P.E.; Mrs. and Harold F. Sommerschild, Chapter President; Mrs. and Dr. A. Allan Bates, Vice President Portland Cement Association; Mrs. and Frank W. Edwards, Toastmaster.

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RE: LICENSING

By WILLIAM W. PORTER II, Chairman
Legislative Committee, Pacific Section, AAPG

Letters in the August issue (*Geological News-Letter*) point out that licensing is not new and is apparently satisfactory to many engineers. The new element is the awakening in the geology profession to the adverse effects of such legislation and amendments proposed from time to time. Many geologists have just realized that such legislation affects their profession.

Lack of balance of such Acts is objectionable. Definitions of engineering embrace broad and inclusive operations in the field of science, whereas, qualifications for licensing are limited to the much narrower background of the "engineering curriculum." It would be burdensome for geologists who do many things in the broadly defined field to meet the narrower requirements. Under the general pattern of licensing acts many geologists, to become licensed, must sacrifice desirable university study in their chosen field and waste time preparing for examinations in subjects of little interest. Yet "engineers" are encroaching on the practice of geology. The present California regulations go so far as to include geological exploration in the practice of "engineering." "Professional engineers" even encroach on the geologists' profession through the land laws. Applicants for oil and gas lands in British Columbia must employ "professional engineers." I quote from "Drilling and Production Regulations," British Columbia (Made by Order in Council No. 1625, Aug. 20, 1947). Part II, Section 4 (in full):

"Every applicant shall conduct all geophysical or subsurface geological work and all geological work for which a refund is claimed *under the supervision of a registered professional engineer* subject to the provisions of the regulations." (Emphasis added.)

Regardless of licensing proponents' claims to the contrary, such legislation is not in the public interest and does not "safeguard the public health, safety and welfare" because it transfers the legal right to conduct geological exploration from those most competent to do it to "professional engineers" who may have mere mediocre ability in the field of geology and related subjects or even none at all.

California geologists have been able to live with the California Act because they did not care about using the title, "Registered Engineer," and because regardless of the definition of "engineering" they were not prevented from practicing their profession. The present commotion stemmed from an attempt in the 1955 legislature to expand the definition of "engineering" and to make registration mandatory in order to practice. California geologists with help from chemists and others effectively killed the bill in committee. Thus, geologists must be alert to new legislation and must fight adverse legislation or they will wake up in a legal straightjacket.

Engineering groups who sponsor legislation should realize that in the broad field of the application of science which they call "engineering," there is more than one background in the field of higher education by which men can become qualified, and that the "engineering school curriculum" is only one of such backgrounds. The practice in the field of science and its application by properly qualified scientists with backgrounds at least equal to in academic stature but different from the "engineering school curriculum" should not be restricted, nor should any one of such backgrounds, including engineering, be permitted legally to pre-empt the field.

From: *Geological News-Letter*, Oct. 1955

Nationalism cannot be abandoned if civilization is to last among free men.
—Herbert Hoover.

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SUNSHINE PHILOSOPHY

During this past summer, while vacationing in a rural community, a couple had the good fortune to make the acquaintance of an old Negro mammy, who at 97 was still spry. "Auntie" lived alone in a spick-and-span cabin and did all her own housework, including the washing.

When they asked her one day how she managed to do it all by herself, she chuckled and gave them a beautiful philosophy of life in a single sentence. Said she, "When ah works, ah works hard; when ah sets, ah sets loose; and when ah starts worryin', ah goes to sleep."

—H. C. H. in *Capper's Weekly*.

Distance lends enchantment—but not when you're out of gas.

—*Wyoming Insuror*.

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The awkward age in the life of a teenage boy is when he discovers that he knows more than his father.

A woman should wear just enough clothes to keep a man warm.

A reckless driver is a fellow who passes you on the highway in spite of all you can do.

Engineering Societies Personnel Service, Inc.

New York Chicago Detroit San Francisco
84 East Randolph Street, Chicago 1, Ill. STate 2-2748

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Did you know Illinois Law specifically mentions 30 days as the dividing line between a temporary and a permanent position, but we use a 90 days period in E.S.P.S.?*

MEN AVAILABLE

Ind. Engr. 36. M.B.A. 1 yr. ind. engr. in central engrg. staff. 1 yr. professor teaching correlating courses to ind. engrs. 1 yr. ind. engr. analyst steel mill. 1 yr. production planner, tool and process aircraft and 1 yr. res. associate, preparing foreman training programs. \$8000. Chicago. 407 PE

Devel. 29. European M.E. degree. 2 yrs. testing and dev. of prototype machines and tech. editor. 2 yrs. apprentice in machine shop, foundry, fitting and test shop. \$5000. Midwest. 408 PE

Research. 33. Gen'l. Engrg. 9 yrs. res. engr. on fuels, automotive parts, charge of acoustical lab. 1½ yrs. mech. engr. testing and des. of aircraft superchargers. \$7200. Chicago. 409 PE

Methods. 26. M.E. 18 mos. determine, maintain and reduce costs of precision switches. Order tools and processes production trouble shooter. \$6700. Midwest 410 PE

Ch. Engr. 47. E.E. 19 yrs. directed activities and entire operation of engrg. org. electro-mech. controls, lab. eqpt., and air cond. controls. \$18,000. Midwest. 411 PE

Quality Control. 33. M.B.A. 7 yrs. statistical quality control work on mfg. plants for the gov't. 1 yr. quality control aircraft engines. 5 yrs. machine shop exp. \$7500. Midwest. 412 PE

Designer. 33. Product Des. 4 yrs. dev. and write machine time standards. 1 yr. time study for foundry. 6 mos. des. of jigs and fixtures. Training and product stylizer limited exp. \$6000. Chicago. 413 PE

Factory Mgr. or Supt. 33. 12 yrs. ind. engrg. in foods, rubber and consult. work. 28 mos. managing instru. plt. and mailing serv. 44 mos. in warehouse engr. \$9500. U. S. 414 PE

Estimator. 41. 14 yrs. charge of estimating, bidding, subcontracts, coordinating and supv. of operations. \$10,000. U. S. 415 PE

Draftsman. 31. 8 yrs. prepare shop dwgs. for all types of constr. 2 yrs. plumbing, draftsman planner and checker. \$4500. Chicago. 416 PE

Mech. Des. 52. I.E. 1½ yrs. checking design dwgs., supv. field erection and installation. 16 mos. des. dwgs. for conveyors. 28 mos. supv. planning and scheduling of functions of chem. plt. 1 yr. schedule and co-ordinate

des. engrg. 2 yrs. checking dwgs. and eqpt. layouts. 417 PE

Ch. Engr. 45. B.A. 5 yrs. mech. engr. on des. of htg. vent-plumbing systems. Stress analysis, piping systems and des. steel work. \$8000. Loc.: Midwest. 418 PE

POSITIONS AVAILABLE

Project Engr. M.E. Age: to 45. 3 plus yrs. exp. in project work on fast-moving machinery such as packaging, printing, or paper folding eqpt. Know: Printing helpful. Duties: project work in design, maint., and installation of very fast moving light automatic machinery. For Mfr. of Paper products. Sal.: to \$10,000. Loc.: Chicago. Employer will negotiate the fee. C-4346

Engr. Supv. (Production). 2 yrs. College. Age: Under 35. 3 plus yrs. exp. packaging or processing industry, preferably foods. Know: Production techniques. Duties: line supv. in peak production periods. Project work, materials handling, flow, methods and time study. When production is retarded. Sal.: Open to \$475. Loc.: Illinois. Empl. will negotiate the fee. C-4380

Asst. Plant Engr. E.E. M.E. Age: Under 40. 3 plus yrs. exp. industrial maint., preferably elect. Know: packaging or processing eqpt. Duties: work with plant engr. carrying out maint. program. Coordinate activities including repairs, new installations, re-locating eqpt., and special projects. For Miller of food. Sal.: Open to \$550. Loc.: Ill. Employer will negotiate the fee. C-4387

Project Engr. M.E. Age: to 45. 4 yrs. exp. press or heavy machinery pref. Know: design and development. Duties: design and development of mechanical and electrical components for brick press from idea to complete shop drawings and data for technical publications. C-4414

Supt. M.E. Age: to 45. 5 plus yrs. exp. in supv. capacity of precision job shop machine shop. Know: close tolerance work. Duties: Supervise all production activities. For job shop of machines. Sal.: \$12,500. Loc.: Western Chicago Suburb. Employer will negotiate the fee. C-4419

Salesman-Instruments. Engrg. deg. Age: 27-35. 2 plus yrs. exp. either indust. sales or process instrumentation. Will also consider rec. grads. Know: process instrumentation

helpful. Duties: calling on diversified industries in Chicago metropolitan area doing basic instrumentation and following through on sales, application and service. For a mfr. of instru. Sal.: \$450-\$550/mo. dep. on exp. and bonus. Some traveling. Car provided. Loc.: Chicago. C-4421

Res. Engr. Age: 27-40. 3 yrs. exp. mech. dev., process eqpt. design and evaluation. Know: chem. or mech. engrg. Duties: plan of development of radioactive waste processing eqpt. Determination of customer needs; economic evaluation of processes; design of requisite eqpt. For fabricator of metal products. Sal.: \$450-\$750. Loc.: Chicago. Employer will pay the fee. C-4423

Mfg. Engr. Age: Up to 45. 3 plus yrs. exp. in des. and mfr. of small electro-mech. devices. Know: tooling and mfg. small precision devices. Duties: coordinating engrg., sales and mfg. modifications to basic line of about 100 std. types to meet special customers requirements, supv. refrig. panel design and converting engag. design to production dwgs. and maintain engrg. stds. For Mfr. of controls. Sal.: \$8000-\$12,000. Loc.: Indiana. Employer will pay the fee. C-4427

Staff Engr. Degree. Age: 30-40. 5 plus yrs. exp. in industrial engr. in mfg. Know: Incentives and time study. Duties: Staff engrg. assignments on production problems. Traveling. For consultants of management. Loc.: Chicago Headquarters. Sal.: \$11,000 plus exp. Employer might negotiate the fee. C-4474

Works Mgr. Degree. 5 plus yrs. as plant mgr. in plt. with multiple processes and products and preferably in paper. Know: over-all engrg. and administration of all mfg. functions. Duties: the initiation and adm. of des., install. and supv. of all controls, procedures, systems and methods for coordinating all line and staff mfg. activities for several plants. For mfr. of paper products. Sal.: \$10,000-\$20,000. Loc.: Chgo. C-4490

Ch. Des. and Dev. Engr. M.E. 5 plus yrs. as Ch. Des. and Dev., engr. on light, fast-moving automatic machy. Duties: Supv. the install. and direction of all machine design and dev. activities. For Mfr. of paper products. Sal.: \$10,000-\$20,000/yr. Location: Chicago. C-4492